

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please CANCEL claim 2 and AMEND claims 1 and 3-6 in accordance with the following:

1. (currently amended) A workpiece conveying apparatus comprising:

a robot having a hand to grip a workpiece and conveying the workpiece; and

a visual sensor, ~~wherein said visual sensor comprises~~ comprising:

image pick-up means for capturing an image of a characteristic portion of the workpiece ~~that~~ while the workpiece is being conveyed moved by said robot to a release position; and

position detecting means for detecting, on the basis of ~~an~~ the image of the characteristic portion obtained by said image pick-up means, ~~the~~ a position of the characteristic portion of the workpiece observed when the image is captured, ~~wherein~~

said visual sensor ~~recognizes~~ recognizes the gripped state of said workpiece while the workpiece is being ~~conveyed~~ moved by the robot to the release position, on the basis of the positions of the robot and the characteristic portion of the workpiece ~~observed~~ when the image is captured;

means for storing in advance a predetermined gripped state established by the hand of said robot;

means for comparing the predetermined gripped state with the gripped state recognized by said visual sensor when the image is captured, and determining an error; and

means for stopping the robot when the error exceeds a predetermined tolerance limit or for issuing a signal indicative of a fault.

2. (cancelled)

3. (currently amended) ~~The workpiece conveying apparatus according to claim 1, further comprising:~~ A workpiece conveying apparatus comprising:

a robot having a hand to grip a workpiece and conveying the workpiece; and

a visual sensor, comprising:

image pick-up means for capturing an image of a characteristic portion of the workpiece while the workpiece is being moved by said robot to a release position; and

position detecting means for detecting, on the basis of the image of the characteristic portion obtained by said image pick-up means, a position of the characteristic portion of the workpiece observed when the image is captured,

said visual sensor recognizing the gripped state of said workpiece while the workpiece is being moved by the robot to the release position, on the basis of the positions of the robot and the characteristic portion of the workpiece when the image is captured;

means for storing in advance a predetermined gripped state established by the hand of said robot;

means for comparing the predetermined gripped state with the gripped state recognized by said visual sensor to determine an error; and

means for correcting ~~at~~ the release position to which said robot conveys the workpiece, on the basis of the error.

4. (currently amended) The workpiece conveying apparatus according to any one of claims 1 ~~and to~~ 3, wherein said gripped state is provided by a relative position and posture between an arm tip or said hand of said robot and said workpiece.

5. (currently amended) The workpiece conveying apparatus according to any one of claims 1 ~~and to~~ 3, ~~wherein means for~~ further comprising a robot controller detecting the positions of the robot observed when the image is captured; ~~is provided in a robot controller, and~~

wherein the robot controller comprises means for synchronizing an image pick-up instruction given to said image pick-up means with the detection of the position of the robot, ~~observed when the image is captured, by means of said detecting means.~~

6. (currently amended) The workpiece conveying apparatus according to claim 5, wherein the imaging instruction synchronized with the detection of the position of the robot ~~observed when~~ the image is captured is repeatedly executed a number of times.